



Arlington Conservation Commission

Date: Thursday, August 3, 2023
Time: 7:00 PM
Location: Conducted by Remote Participation

Please register in advance for this meeting. Reference materials, instructions, and access information for this specific meeting will be available 48 hours prior to the meeting on the Commission's agenda and minutes page. Pursuant to State Legislation suspending certain provisions of the Open Meeting Law, G. L. c. 30A, § 20 relating to the COVID-19 emergency, the June 1, 2023, public meeting of the Arlington Conservation Commission shall be physically closed to the public to avoid group congregation. The meeting shall instead be held virtually using Zoom. Please note: Not all items listed may in fact be discussed and other items not listed may be brought up for discussion to the extent permitted by law. This agenda includes those matters which can be reasonably anticipated to be discussed at the meeting.

Agenda

1. Administrative
 - a. Correspondence Received.
All correspondence is available to the public. For a full list, contact the Conservation Agent at concomm@town.arlington.ma.us.
2. Discussion
 - a. Symmes Conservation Restriction/Arlington 360.
 - b. Water Bodies Working Group.
 - c. Tree Committee Liaison.
 - d. Park & Recreation Commission Liaison.
 - e. Open Space Committee.
3. Hearings

Request for Permit Extension: 869 Massachusetts Avenue (Arlington High School).

Request for Permit Extension: 869 Massachusetts Avenue (Arlington High School).

This public hearing will consider an extension to the permit for work at Arlington High School (DEP #091-0323) for construction of a new high school at 869 Massachusetts Avenue within the 100-foot Wetlands Buffer, Adjacent Upland Resource Area, and the 200-foot Riverfront Area of Mill Brook.



Town of Arlington, Massachusetts

Correspondence Received

Summary:

Correspondence Received.

All correspondence is available to the public. For a full list, contact the Conservation Agent at concomm@town.arlington.ma.us.

ATTACHMENTS:

Type	File Name	Description
Reference Material	Correspondence_Received_re_Arlington_360.pdf	Correspondence Received re Arlington 360
Reference Material	Correspondence_Received_re_Arlington_Reservoir_Shoreline.pdf	Correspondence Received re Arlington Reservoir Shoreline
Reference Material	Correspondence_Received_re_House_Bill_H3948.pdf	Correspondence Received re House Bill H3948
Reference Material	Written_testimony_H3948_Chapnick_26July2023.pdf	Written testimony by Susan Chapnick regarding H3948
Reference Material	Hills.Pond_Field.Notes_7.31.2023.pdf	Hills.Pond_Field.Notes_7.31.2023
Reference Material	Chapnick_Bylaw_Section_4_-_Permit_Extension.pdf	Memo from Susan Chapnick to Jim Feeney regarding Arlington High School Permit Extension

Re: Submittal of Draft Forest Restoration and Invasive Species Mitigation Plan / Arlington 360 Apartments

David Morgan <dmorgan@town.arlington.ma.us>

Tue 8/1/2023 3:20 PM

To: Adam Post <adam.post@greystar.com>

Cc: Dan Cathcart <dan.cathcart@gmail.com>; Stephanie Donlin <SDonlin@greystar.com>; Matt Clickman <matt.clickman@greystar.com>; Kirk Aubuchont <kaubuchont@bealsandthomas.com>; ctirone@ci.reading.ma.us <ctirone@ci.reading.ma.us>; Susan Chapnick <s.chapnick@comcast.net>

Bcc: Chris Leich <cmleich@comcast.net>

Hi Adam,

I'm posting Thursday's agenda now, which includes discussion of the survey and forest management plans at Arlington 360. Could you please confirm who'll be in attendance?

I know the Commissioners have questions about the forest management plan that it would be good to have the arborist answer, likewise for the surveyor.

Cheers,
David

David Morgan | Environmental Planner + Conservation Agent | Department of Planning and Community Development | 781.316.3012

Arlington values equity, diversity, and inclusion. We are committed to building a community where everyone is heard, respected, and protected.

From: David Morgan <dmorgan@town.arlington.ma.us>

Sent: Thursday, July 20, 2023 1:11 PM

To: Adam Post <adam.post@greystar.com>

Cc: Dan Cathcart <dan.cathcart@gmail.com>; Stephanie Donlin <SDonlin@greystar.com>; Matt Clickman <matt.clickman@greystar.com>; Kirk Aubuchont <kaubuchont@bealsandthomas.com>

Subject: Re: Submittal of Draft Forest Restoration and Invasive Species Mitigation Plan / Arlington 360 Apartments

Hi Adam,

Thank you for the update. The next meeting is on August 3rd, 7 PM, on Zoom. Details can be found [here](#). Please plan to have someone present to answer questions concerning the survey and forest management plans.



Conservation Commission Calendar |
Town of Arlington

/

www.arlingtonma.gov

Cheers,
David

David Morgan | Environmental Planner + Conservation Agent | Department of Planning and Community Development | 781.316.3012

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From: Adam Post <adam.post@greystar.com>

Sent: Thursday, July 20, 2023 8:17 AM

To: David Morgan <dmorgan@town.arlington.ma.us>

Cc: Dan Cathcart <dan.cathcart@gmail.com>; Stephanie Donlin <SDonlin@greystar.com>; Matt Clickman <matt.clickman@greystar.com>; Kirk Aubuchont <kaubuchont@bealsandthomas.com>

Subject: Re: Submittal of Draft Forest Restoration and Invasive Species Mitigation Plan / Arlington 360 Apartments

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good morning, David.

Unfortunately, I was unaware that the meeting was tonight so nobody will be able to attend as I am the only person available.

I can make the next meeting for sure, however.

The surveyor is not under contract as of yet, but the contract is written, and we are working on finalizing it this week.

Sent from my Verizon, Samsung Galaxy smartphone

Get [Outlook for Android](#)

From: David Morgan <dmorgan@town.arlington.ma.us>

Sent: Thursday, July 20, 2023 8:04:23 AM

To: Adam Post <adam.post@greystar.com>

Cc: Dan Cathcart <dan.cathcart@gmail.com>; Stephanie Donlin <SDonlin@greystar.com>; Matt Clickman <matt.clickman@greystar.com>; Kirk Aubuchont <kaubuchont@bealsandthomas.com>

Subject: [EXTERNAL] Re: Submittal of Draft Forest Restoration and Invasive Species Mitigation Plan / Arlington 360 Apartments

Thanks, Adam. Who can be at tonight's ConCom meeting? With the forest management plan in hand, there are things to discuss about that scope of work.

Cheers,
David

David Morgan | Environmental Planner + Conservation Agent | Department of Planning and Community Development | 781.316.3012

Arlington values equity, diversity, and inclusion. We are committed to building a community where everyone is heard, respected, and protected.

From: Adam Post <adam.post@greystar.com>

Sent: Wednesday, July 19, 2023 3:53 PM

To: David Morgan <dmorgan@town.arlington.ma.us>

Cc: Dan Cathcart <dan.cathcart@gmail.com>; Stephanie Donlin <SDonlin@greystar.com>; Matt Clickman <matt.clickman@greystar.com>; Kirk Aubuchont <kaubuchont@bealsandthomas.com>

Subject: Re: Submittal of Draft Forest Restoration and Invasive Species Mitigation Plan / Arlington 360 Apartments

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Good afternoon, David,

I spoke with Beales and Thomas this morning.

I was advised that notices have been sent to abutters.

I believe the actual field work is scheduled to begin next week:

I will update you further next week as we are trying to navigate some delays resulting from the exorbitant amount of rain this summer and previously scheduled vacations.

Thank you for checking in and I will update you asap.

This message was sent from a mobile device. Please disregard and excuse any typographical errors.

Adam W. Post - Construction Project Manager (MSCPM / CCPI)

Greystar Construction Service -New England

Cell #: (617) 581-3430

From: David Morgan <dmorgan@town.arlington.ma.us>

Sent: Wednesday, July 19, 2023 3:22:00 PM

To: Adam Post <adam.post@greystar.com>

Cc: Dan Cathcart <dan.cathcart@gmail.com>; Stephanie Donlin <SDonlin@greystar.com>; Matt Clickman <matt.clickman@greystar.com>; Kirk Aubuchont <kaubuchont@bealsandthomas.com>

Subject: [EXTERNAL] Re: Submittal of Draft Forest Restoration and Invasive Species Mitigation Plan / Arlington 360 Apartments

Hi Adam,

With tomorrow night's meeting on the horizon, I'm checking in again to see about the contract status and who can speak to the Commission about progress with the conservation restriction. Can you please let me know what the plan is?

Cheers,
David

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From: David Morgan <dmorgan@town.arlington.ma.us>

Sent: Monday, July 17, 2023 9:41 AM

To: Adam Post <adam.post@greystar.com>

Cc: Dan Cathcart <dan.cathcart@gmail.com>; Stephanie Donlin <SDonlin@greystar.com>; Matt Clickman <matt.clickman@greystar.com>; Kirk Aubuchont <kaubuchont@bealsandthomas.com>

Subject: Re: Submittal of Draft Forest Restoration and Invasive Species Mitigation Plan / Arlington 360 Apartments

Hi Adam,

Following up on my inquiry below, do we have the surveyor under contract? Who can attend Thursday night's Conservation Commission meeting to discuss?

Cheers,
David

David Morgan | Environmental Planner + Conservation Agent | Department of Planning and Community Development | 781.316.3012

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From: David Morgan <dmorgan@town.arlington.ma.us>

Sent: Thursday, July 6, 2023 6:09 PM

To: Adam Post <adam.post@greystar.com>

Cc: Dan Cathcart <dan.cathcart@gmail.com>; Stephanie Donlin <SDonlin@greystar.com>; Matt Clickman <matt.clickman@greystar.com>; Kirk Aubuchont <kaubuchont@bealsandthomas.com>

Subject: Re: Submittal of Draft Forest Restoration and Invasive Species Mitigation Plan / Arlington 360 Apartments

Hi Adam,

I am back from vacation and still sifting through a full inbox, so will review the management plan soon and share it with the parties to the CR.

Can you please confirm for me that you've hired a surveyor and have them under contract? Details like the scope of work would be helpful to see.

Cheers,
David

David Morgan | Environmental Planner + Conservation Agent | Department of Planning and Community Development | 781.316.3012

Arlington values equity, diversity, and inclusion. We are committed to building a community where everyone is heard, respected, and protected.

From: Adam Post <adam.post@greystar.com>

Sent: Friday, June 23, 2023 1:37 PM

To: David Morgan <dmorgan@town.arlington.ma.us>

Cc: Dan Cathcart <dan.cathcart@gmail.com>; Stephanie Donlin <SDonlin@greystar.com>; Matt Clickman <matt.clickman@greystar.com>; Kirk Aubuchont <kaubuchont@bealsandthomas.com>

Subject: Submittal of Draft Forest Restoration and Invasive Species Mitigation Plan / Arlington 360 Apartments

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

David,

It was a pleasure speaking with you again yesterday afternoon.

As we discussed, please find attached the draft of the Arlington 360 Apartments Forest Restoration and Invasive Species Mitigation Plan.

Upon your review, please feel free to contact me to discuss.

I would be pleased to coordinate a call with Daniel E. Cathcart Registered Consulting Arborist of Plant Healthcare Consultants, Inc. (copied here) to discuss this further.

I have also attached an updated version of the conceptual project schedule timeline for your review and comments.

Per our discussion yesterday, I believe that since we have been able to reestablish a path forward from the recent unforeseen delay from our previously submitted timeline, we have now become demonstrated our willingness and intent to fully comply and work with the town.

Please confirm, as we discussed, that the town is no longer intending to and will not pursue any further actions as long as we continue along with forward momentum and communication accordingly.

Please advise.

Thank you and have a pleasant weekend,

Regards,

Adam Post

Adam W. Post | Construction Project Manager, Construction Management Services
Greystar | One Federal Street | Suite 1804 | Boston, Ma 02110
Mobile: (617) 581-3430 | adam.post@greystar.com | greystar.com

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Re: Res shore line -- ducks and geese gathering in beach area

Joe Connelly <jconnelly@town.arlington.ma.us>

Tue 8/1/2023 2:01 PM

To: chrisaquila@comcast.net <chrisaquila@comcast.net>

Cc: David Morgan <dmorgan@town.arlington.ma.us>; ConComm <ConComm@town.arlington.ma.us>; 'Garballey, Sean - Rep. (HOU)' <Sean.Garballey@mahouse.gov>; Scott Walker <swalker17@hotmail.com>; DWarren <dwarren@town.arlington.ma.us>

Hi Christine,

I will let others who know more than I answer some of the technical questions but I can answer those related to Recreation Department operations. The Arlington Recreation Department has not done anything different than it has in past years. As far as your concerns over geese and ducks in the beach area, this has been happening since I started with the Town of Arlington in 2001 and I know was a standing issue for many years before that. Sean who was one of our lifeguards at the Reservoir many years ago can attest to that as well. As I am sure you know the water is treated with chlorine and is filtered. We monitor chlorine levels daily and an outside lab tests the water twice a week and reports the results directly to the Board of Health. I am pleased to report that our weekly tests have been excellent and the beach water has never been better.

Last summer the water level was uniquely low and the water chestnut issue over the last couple of years was a major concern. This year thanks to David Morgan of Conservation and numerous volunteers the water chestnuts were harvested early and the reservoir looks better than it has in recent years.

I hope this at least answers some of your questions as to beach operations.

Sincerely,

Joseph Connelly, M.Ed.
Director of Recreation
Town of Arlington
781-316-3889
jconnelly@town.arlington.ma.us

Public Records Notice

Please be advised that pursuant to G.L. c. 4 sec. 7(26) email correspondence to and from public employees is considered a public record. Only where the content of an email falls within one of the stated exemptions within the law may the Town withhold documents or information.

From: RecOffice <recoffice@town.arlington.ma.us>

Sent: Tuesday, August 1, 2023 12:06 PM

To: Joe Connelly <jconnelly@town.arlington.ma.us>

Subject: Fw: Res shore line -- ducks and geese gathering in beach area

From: Christine <chrisaquila@comcast.net>

Sent: Monday, July 31, 2023 1:42 AM

To: RecOffice <recoffice@town.arlington.ma.us>

Cc: ConComm <ConComm@town.arlington.ma.us>; Sean.Garballey@mahouse.gov

<Sean.Garballey@mahouse.gov>

Subject: Res shore line -- ducks and geese gathering in beach area

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

To whom it may concern:

The Arlington Reservoir is a common place for birders to come and observe migratory birds, including shore birds. This summer there has been a complete absence of any shore birds and the local ducks and geese are now inhabiting the beach area instead of the Res proper. I wonder if anyone has brought this to your attention. As a birder, who has been visiting the Arlington Reservoir for years to see the shore birds and other water birds I find this very alarming.

An informed wildlife photographer who has been documenting the wildlife at the Res for many years informed me that the total lack of any ducks or geese on the Res proper, and the disappearance of the usual shore birds (including the swans) is happening because the Reservoir's water level is too high and there is no longer a shallow shelf along the shore for the birds to gather, feed, nest and raise their young. The local ducks and geese have resorted to populating the beach, where those conditions exist. But where are the great blue herons and other shore birds which I have observed over the years? I also worry about the quality of the water in the beach area, where I swim, which must be affected by the geese and ducks that are sharing the water there.

Bird populations of all kinds are crashing for many reasons, but primarily due to loss of habitat. The Arlington Reservoir is an important habitat for migratory birds. Whatever has been done to disrupt their habitat must be remedied to protect the wildlife that have come to depend upon Res for this.

I look forward to your reply.

Christine Aquilino
81 Edmund Rd.
Arlington

House Bill H.3948 / Hearing Date 7/26/23


Susan D. Chapnick <s.chapnick@comcast.net>

Tue 7/25/2023 8:49 PM

To: jordan.latham@mahouse.gov <jordan.latham@mahouse.gov>; haley.dillon@masenate.gov <haley.dillon@masenate.gov>

Cc: sean.garballey@mahouse.gov <sean.garballey@mahouse.gov>; cindy.friedman@masenate.gov

<cindy.friedman@masenate.gov>

 1 attachments (259 KB)

Written testimony H3948_Chapnick_26July2023.pdf;

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Please accept the attached Written Testimony in support of the House Bill H.3948 "An Act Prohibiting State and Municipal Contracts for the Purchase and Installation of Artificial Turf Fields."

Thank you.

Susan D. Chapnick, M.S.

President & Principal Scientist

NEH, Inc.

2 Farmers Cir

Arlington, MA 02474

ph: 617-643-4294

www.neh-inc.com





Joint Committee on State Administration and Regulatory Oversight
via email to Jordan Latham at jordan.latham@mahouse.gov
Haley Dillon haley.dillon@masenate.gov

Bill No.: H.3948

Hearing Date: July 26, 2023

Dear Chairs and Members of the Joint Committee on State Administration and Regulatory Oversight,

Please accept this written testimony in favor of House Bill No. H.3948 "An Act Prohibiting State and Municipal Contracts for the Purchase and Installation of Artificial Turf Fields."

I am an environmental chemist and principal scientist with New Environmental Horizons, Inc. (NEH), an environmental consulting firm with offices in Arlington, MA and Skillman, NJ. I am also an appointed member of the Massachusetts Department of Environmental Protection (MassDEP) Bureau of Waste Site Cleanup (BWSC) Advisory Board and a Conservation Commissioner in the Town of Arlington.

The current weight-of-evidence points to adverse impacts on the environment, including protected wetland resource areas, from Artificial Turf Fields and negative climate resilience impacts. The practicable alternative is organically managed natural turf fields that are well-constructed for improved drainage.

Adverse Impacts

- 1) Chemical Pollution: Toxic chemicals harmful to wetland resource areas can migrate through leaching, airborne dust, volatilization, and physical migration of infill particles. Known toxic chemicals including zinc, lead, polyaromatic hydrocarbons (PAHs), phthalates (endocrine disruptors), and volatile organic compounds (VOCs), have been documented (1, 2, 5, 6). Direct toxicity to aquatic organisms has been documented from Artificial Turf Field surface runoff during rainstorms based on whole effluent toxicity and Zinc toxicity (3). PFAS, the "forever" chemical, is found mainly in the grass blades and carpet backing material. PFAS environmental impacts from artificial turf are under-studied, but part-per-trillion (ppt) levels have been shown to have adverse effects (6) and PFAS has been documented to leach from Artificial Turf Fields (8). EPA is expecting to publish aquatic life criteria for PFAS in 2023 (9). Furthermore, recent scientific studies and reports (10, 11) have shown that an emerging contaminant, the chemical "6ppd-quinone" that is derived from the oxidation/weathering of tires, is acutely toxic to freshwater fish (rainbow trout and brook trout) – meaning it is the cause of fish kills. Tire crumb rubber is currently the most commonly used infill in artificial turf fields. Therefore, artificial turf fields with crumb rubber infill will leach 6ppd-quinone into the environment and aquatic systems.

- 2) Heat Effects: Artificial turf fields exacerbate heat stress in already stressed urban resource areas. This has negative environmental and human impacts and can be an environmental justice (EJ) issue due to increased heat island effects in EJ communities. Temperatures of over 150 degrees F have been routinely recorded on Artificial Turf Fields during June and summer months, compared to natural grass fields with temperatures of less than 90 degrees F (5). Cooling of artificial turf fields for use by spraying water exacerbates chemical, plastic, and particulate pollution. Increased heat effects due to climate change will add, for example, 13 to 23 days of greater than 90 degrees F from the current 8 days per year in the town of Arlington (Table 26, reference 7).
- 3) Plastic Pollution: Synthetic grass fibers are made of polyethylene or polypropylene plastic. Plastic and rubber infill particles migrate into resource areas, resulting in plastic and microplastic pollution. Plastics are a known source of endocrine disruptors. Plastics and microplastics are consumed by aquatic organisms and negatively impact the ecosystem.
- 4) Particulate Pollution: Crumb rubber infill and weathered plastic blades routinely migrate from older fields into the surrounding resource areas. This has been directly observed in Arlington, at the Arlington Catholic High School artificial turf field, which is within 100 feet of a protected brook (reference Arlington Conservation Commission communication and site pictures through March 2023, included in the public record).
- 5) Adverse Climate Change Resilience: heat stress negatively impacts habitat values, increased pollutant loads from surface runoff and infill particulate migration, loss of carbon sequestration as a climate resilience strategy, limited useful lifespan (8-10 years) generates additional, recurrent installation impacts on the environment and the surrounding community.
- 6) Adverse Impacts on the environment/wildlife habitat from Artificial Turf fields include: toxicity to aquatic life from crumb rubber infill (including fish deaths and reproductive stress), loss of habitat for insects and other invertebrates (especially burrowing organisms), limited foraging and prey availability for birds and small mammals, loss of pollinator use, disrupted habitat connectivity, and impacts to species composition and the water cycle owing to extreme heat.

Practicable Alternative

Organically managed natural turf fields employing aeration & mowing techniques and/or over similar stormwater infiltration systems used below artificial turf fields allow for:

- 1) improved drainage;
- 2) reduces the need for extensive nutrients and harmful chemical/pesticide treatments;
- 3) allows for some habitat functions including wildlife corridor connectivity;
- 4) is a more climate resilient alternative because it is sustainable, has lower heat effects, and less pollution runoff.

Examples in the Commonwealth of successful organically managed natural turf fields include: Springfield with 67 acres of organically managed athletic fields (12), Marblehead with 20 acres of organically managed athletic fields (13), and Martha's Vineyard (14). The Toxic Use Reduction Institute (TURI) report includes a cost comparison table for Artificial Turf vs. Organically managed Natural Turf (4).

Respectfully submitted,



Susan D. Chapnick, M.S.

President & Principal Scientist, NEH / www.neh-inc.com

2 Farmers Circle, Arlington, MA 02474

s.chapnick@comcast.net / ph: 781-643-4294 / cell: 781-572-2209

References:

- 1) EPA, July 2019: Tire Crumb Rubber Characterization
<https://www.epa.gov/chemical-research/july-2019-report-tire-crumb-rubber-characterization-0>
- 2) R. Massey, L. Pollard, & H. Harari, Journal of Environmental & Occupational Health Policy, February 23, 2020 (Vol 30, Issue 1): Artificial Turf Infill: A comparative Assessment of Chemical Contents
<https://journals.sagepub.com/doi/full/10.1177/1048291120906206>
- 3) CTDEP, July 2010: Artificial Turf Study: Leachate and Stormwater Characteristics
<https://portal.ct.gov/-/media/DEEP/artificialturf/DEPArtificialTurfReportpdf.pdf>
- 4) TURI, September 2020: Athletic Playing Fields & Artificial Turf: Considerations for Municipalities and Institutions
https://www.turi.org/content/download/13271/203906/file/Factsheet.Artificial_Turf.September2020.pdf.pdf
- 5) TURI, April 2019 (updated): Athletic Playing Fields – Choosing Safer Options for Health and the Environment
<https://www.turi.org/content/download/11980/188623/file/TURI+Report+2018-002+June+2019.+Athletic+Playing+Fields.pdf>
- 6) TURI, February 2020: Per- and Poly-fluoroalkyl Substances (PFAS) in Artificial Turf Carpet
<https://www.turi.org/content/download/12963/201149/file/TURI+fact+sheet+-+PFAS+in+artificial+turf.pdf>
- 7) Town of Arlington Hazard Mitigation Plan – 2020 update
<https://www.arlingtonma.gov/home/showpublisheddocument/51627/637268071185670000>
- 8) York Analytical Data for PFAS from swale runoff of Amity High School Artificial Turf Field in Woodbridge, CT, 2021
<https://subscriber.politicopro.com/eenews/f/eenews/?id=00000181-b526-d010-a3cb-b5aed1070000>
- 9) PFAS Strategic Roadmap: EPA’s Commitments to Action 2021-2024
https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf
- 10) Acute Toxicity of the Tire Rubber-Derived Chemical 6PPD-quinone to Four Fishes of Commercial, Cultural, and Ecological Importance, March 2022
<https://pubs.acs.org/doi/10.1021/acs.estlett.2c00050>
- 11) Product – Chemical Profile for Motor Vehicle Tires Containing N-(1,3-Dimethylbutyl)-N’phenyl-p-phenylenediamine (6PPD), 2022
https://dtsc.ca.gov/wp-content/uploads/sites/31/2022/05/6PPD-in-Tires-Priority-Product-Profile_FINAL-VERSION_accessible.pdf
- 12) City of Springfield, June 2019: Natural Grass Playing Field Case Study
<https://www.turi.org/content/download/12156/190509/file/Natural+Grass+Playing+Field+Case+Study+Springfield+MA.+June+2019.pdf>
- 13) Marblehead, November 2020 (revised): Natural Grass Playing Field Case Study: Marblehead, MA
<https://www.turi.org/content/download/12705/198916/file/Natural+Grass+Playing+Field+Case+Study+Marblehead+MA+revised.Nov2020.pdf>
- 14) Martha’s Vineyard, December 2020: Natural Grass Playing Field Case Study: Martha’s Vineyard, MA
<https://www.turi.org/content/download/13432/205432/file/Natural+Grass+Playing+Field+Case+Study+MV+MA.Dec2020.pdf>

FIELD NOTES SUMMARY

Customer: Town of Arlington
Pond Name: Hills Pond
Site Location: Alrington, MA
Date: 7/31/23

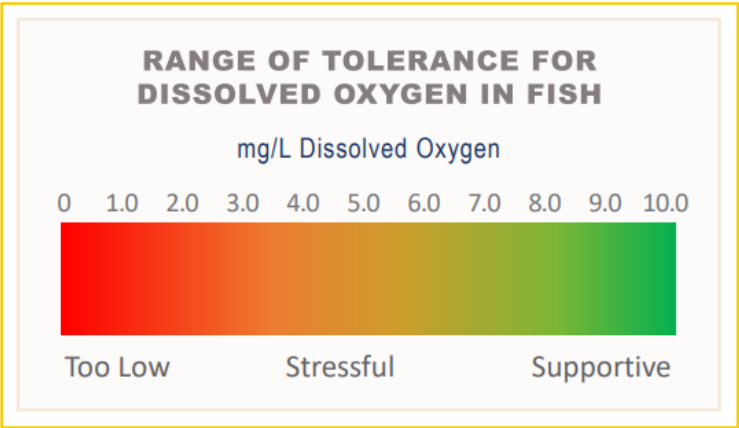
On 7/31/23, Aquatic Biologist, Scott Conrade, and Aquatic Field Assistant, Grace Adams, made a visit to Hills Pond. The following services were completed during the visit:

Upon arrival to the site, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Plants documented during the survey are documented in the table below. (*) denotes an invasive species. Invasive species are non-native to the ecosystem and are likely to cause economic harm, environmental harm, or harm to human health.

Species Identified	
Common Name	Latin Name
Duckweed	<i>Lemna</i>

While on-site, dissolved oxygen (DO) and temperature readings were collected using a calibrated YSI meter with optical sensor. Dissolved oxygen is the amount of oxygen in water that is available to aquatic organisms. DO is necessary to support fish spawning, growth, and activity. Tolerance varies by species, but the figure below provides a general range of fish tolerance (Source: epa.gov). Dissolved oxygen can be affected by

many outside factors, such as: temperature, time of day, and pollution. Dissolved oxygen levels are typically lowest early in the morning. Healthy water should generally have concentrations of about 6.5-8+ mg/L.



Results from the visit are included in the table below:

Temperature & Dissolved Oxygen	
Surface Temp (°C)	Surface DO (mg/L)
27.8	6.76

Water Quality Parameters
Algae ID, Classification, Biomass
Phosphorus, Total (water)
Phosphorus, Free Reactive (water)

Additional samples were collected from the contracted locations. The samples were properly preserved, and shipped on-ice via FedEx Overnight, or transported directly to the most appropriate lab. The lab will analyze the samples for the

contracted/required parameters which are listed in the table above. Results will be provided upon receipt from the lab or in the year end-summary report, as applicable. Any concerning results will immediately be brought to the attention of the Client.

EutroSORB Filters were installed/placed at appropriate locations per the contract. EutroSORB filters are a novel technology specifically designed for intercepting soluble reactive phosphorus (SRP) from moving water. This is an economical solution to proactively reduce phosphorus input. Phosphorus is the limiting nutrient which fuels nuisance plant and algae growth.

Additional Notes from the Biologist
<p>Today marked our first visit to Hills Pond during the 2023 season. We will continue making visits in both August and September. A survey was conducted and water quality was collected. We will send over the algae and phosphorus results as soon as we have them from the lab. Generally, the pond looked great! There were no signs of a potentially harmful algae bloom, despite the public health advisory being in place. Minimal duckweed was documented along some portions of the shoreline and in the filtration basin. In this area, minimal filamentous algae was also documented near the cattails. The EutroSORB filters were placed in this area to ideally filter some of the phosphorus entering Hills Pond. The aeration system was inspected and as anticipated, 3 of the 4 diffusers were working as intended. The 4th diffuser is powered by the second compressor which is not providing enough air. Our recommendation earlier in the season was to replace this compressor to allow for proper airflow to all four diffusers.</p>

As always, we will notify you prior to any upcoming visits, as applicable. Please feel free to reach out to us directly with any questions.

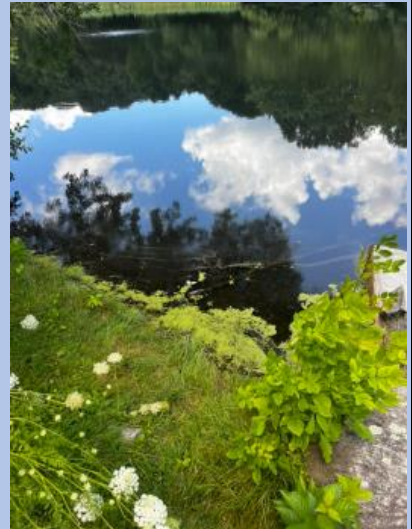
Photo 1



Photo 2



Photo 3



ARLINGTON BYLAW

SECTION 4. APPLICATION FOR AND ISSUANCE OF DETERMINATION OF APPLICABILITY OR PERMIT

B. NOTICE OF INTENT & PERMIT

A permit shall expire three (3) years from the date of issuance. A permit may be renewed for up to three years, provided that a request for a renewal is received in writing by the Commission not less than 30 days prior to expiration. The Commission may deny the request for an extension and require a new Notice of Intent in the following circumstances:

1. where no work has begun on the project;
2. where new information, not available at the time the permit was issued, has become available and indicates that the permit is not adequate to protect the resource area values protected by this Bylaw;
3. where incomplete work is causing damage to the resource area values protected by the Bylaw; or,
4. where work has been done in violation of the permit.

The existing AHS permit is dated 8/04/2020.

Recent scientific studies and reports have shown that an emerging contaminant, the chemical “6ppd-quinone” that is derived from the oxidation/weathering of tires, is acutely toxic to freshwater fish (rainbow trout and brook trout) – meaning it is the cause of fish kills. Tire crumb rubber is currently the most commonly used infill in artificial turf fields. Artificial turf fields with crumb rubber infill will leach 6ppd-quinone into the environment and aquatic systems. The scientific paper on the direct toxicity of 6ppd-quinone to freshwater fish was published 3/02/2022 and was unavailable at the time the permit was issued:

Acute Toxicity of the Tire Rubber-Derived Chemical 6PPD-quinone to Four Fishes of Commercial, Cultural, and Ecological Importance. <https://pubs.acs.org/doi/10.1021/acs.estlett.2c00050>

The CA Department of Toxic Substance Control and CalEPA put out a comprehensive report on 6ppd and its degradation products, including 6ppd-quinone. Since this report came out before the scientific paper referenced above, they only reference direct toxicity of 6ppd-quinone to coho salmon. However, the report states that “It will take years of testing to determine 6PPD-quinone’s toxicity to other species but action on 6PPD now may protect other aquatic organisms.”

This report on 6ppd was published in March 2022 and was also unavailable at the time the permit was issued:

Product – Chemical Profile for Motor Vehicle Tires Containing N-(1,3-Dimethylbutyl)-N’phenyl-p-phenylenediamine (6PPD). https://dtsc.ca.gov/wp-content/uploads/sites/31/2022/05/6PPD-in-Tires-Priority-Product-Profile_FINAL-VERSION_accessible.pdf